

**SUPPLEMENTAL AMENDMENT UNDER 37 C.F.R. § 1.111**  
U.S. Application No. 09/788,621

**Q63282**

**AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

**LISTING OF CLAIMS:**

1. through 16. (cancelled).

17. (currently amended): A method for modifying a refractive index of an optical waveguide device having a core section doped with GeO<sub>2</sub> and a clad section, said method comprising the steps of:

condensing ultra short pulse laser rays having a pulse width not more than 30 picoseconds using an objective lens,

irradiating to at least one of the core section and the clad section, and

saturating the change of the refractive index of the core section;

wherein the ultra short pulse laser rays are irradiated, while scanned along the core section at least one time, to the core section of the optical waveguide to modify and saturate the refractive index thereof;

wherein the laser rays are irradiated to the core section for heating the core section as well as for modifying the refractive index of the core section so that a color center which is unstable in heat, is removed by heat generated by the irradiation of the laser rays based on a structural change of the core section, thereby making thermal treatment unnecessary; and

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~~The method as defined in claim 1, wherein the optical wave-guide device includes an array wave guide grating for dividing multiplexed rays used for WDM optical telecommunication and binding the divided rays, and the refractive index is modified such that a ray having a specified wavelength is coupled to the optical wave-guide.~~

18. (currently amended) A method for modifying a refractive index of an optical wave-guide device having a core section doped with GeO<sub>2</sub> and a clad section, said method comprising the steps of:

condensing ultra short pulse laser rays having a pulse width not more than 30 pico-seconds using an objective lens,

irradiating to at least one of the core section and the clad section, and

saturating the change of the refractive index of the core section;

wherein the ultra short pulse laser rays are irradiated, while scanned along the core section at least one time, to the core section of the optical wave-guide to modify and saturate the refractive index thereof;

wherein the laser rays are irradiated to the core section for heating the core section as well as for modifying the refractive index of the core section so that a color center which is unstable in heat, is removed by heat generated by the irradiation of the laser rays based on a structural change of the core section, thereby making thermal treatment unnecessary; and

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~~The method as defined in claim 1,~~ wherein the optical wave-guide device includes a fiber grating for diffracting a ray having a specified wavelength and the refractive index of the grating is modified by the specified wavelength.

19. through 26. (canceled).